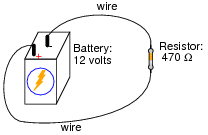
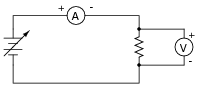
Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ohm’s Law Worksheet

1. Explain, step by step, how to calculate the amount of current (I) that will go through the resistor in this circuit:

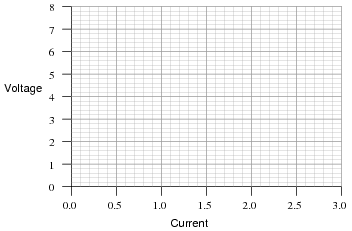




2. Suppose you were to build this circuit and take measurements of current through the resistor and voltage across the resistor:

Recording these numerical values, the results look something like the numbers in the table. Plot these figures on the graph.

|  |  |
| --- | --- |
| **Current** | **Voltage** |
| 0.22 A | 0.66 V |
| 0.47 A | 1.42 V |
| 0.85 A | 2.54 V |
| 1.05 A | 3.16 V |
| 1.50 A | 4.51 V |
| 1.80 A | 5.41 V |
| 2.00 A | 5.99 V |
| 2.51 A | 7.49 V |



3. What mathematical relationship do you see between voltage and current in this simple circuit?

4. One of the fundamental equations used in electricity and electronics is *Ohm's Law*: the relationship between voltage (E or V, measured in units of *volts*), current (I, measured in units of *amperes*), and resistance (R, measured in units of *ohms*):

E= IR I= E/R R= E/I

Where,

E = Voltage in units of volts (V)

I = Current in units of amps (A)

R = Resistance in units of ohms (Ω)

Solve for the unknown quantity (E, I, or R) given the other two:

|  |  |  |  |
| --- | --- | --- | --- |
| KNOWN | KNOWN | UNKNOWN | SHOW your formula and your work |
| I = 20 mA | R = 5 kΩ | E = |  |
| I = 150 μA | R = 47 kΩ | E = |  |
| E = 24 V | R = 3.3 MΩ | I = |  |
| E = 7.2 kV | R = 900 | I = |  |
| E = 1.02 mV | I = 40 μA | R = |  |
| E = 3.5 GV | I = 0.76 kA | R = |  |
| I = 0.00035 A | R = 5350 Ω | E = |  |
| I = 1,710,000 A | R = 0.002 Ω | E = |  |